Part Four. Other Electrical Procedures

CHAPTER 11

Building Attachments and Services

All electrical energy supplied to power-consuming devices and appliances within a building must pass through the electrical service-entrance equipment where it is metered, protected, and distributed through branch circuits. The size is determined by the amount of power-consuming devices connected. Power from military generators or the local power company is delivered into the building (overhead or underground) through lead-in conductors.

SERVICE WIRES

The service wire from the pole to the building usually consists of two, three, or four conductors on separate insulators at the pole and the building or two- or three-conductor, concentric-type service cables. When installing attachments and services, use insulated conductors. If installing an overhead service drop is impractical, run services underground from a transformer installation.

LENGTH

Keep service drops less than 100 feet long for No 8, 6, 4, or 2 wire. For No 0 or larger wire, do not exceed 75-foot spans unless proper anchoring and support is provided. Long or large services should be guyed at the line pole.

SIZE

Although No 6 wire is recommended for overhead service cable, you should determine the size by the maximum demand load of electrical equipment used in each building. Use *Table 11-1, page 11-2,* to determine the size of service conductors needed. Since these calculations do not take motor-starting currents into consideration, make a separate check for objectionable flicker. The number of wires in the service depends on the limits given in the figures and other factors, such as equipment rating. For two-wire service, the limit is two circuits in general-service buildings and four circuits or a 3-kilowatt connected load in barracks. Three-wire services are required for greater loads. Use three- or four-wire service to supply more than one service switch.

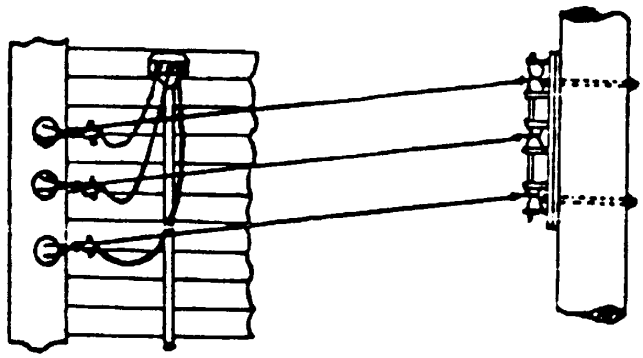
SERVICE ATTACHMENT AT BUILDINGS

Attach the service drop to the building where outlet wires can be tapped in easily without trailing along the building. Install the attachment at least 10 feet above the ground or 18 feet above a roadway. When the building is not high enough, install a riser or a pole to obtain proper clearance. *Figure 11-1, page 11-2,* shows a correct open-wire service installation. *Figures 11-2 through 11-13, pages 11-3 through 11-6,*

show various methods of attaching service insulators for several types of building construction. *Figures 11-14 through 11-16, pages 11-6 through 11-8,* show methods of attaching services to structures.

Table 11-1. Conductor types and sizes

Copper (AWG or MCM)	Aluminum or Copper-Clad AL (AWG or MCM)	Ampere Rating
4	2	100
3	1	110
2	1/0	125
1	2/0	150
1/0	3/0	175
2/0	4/0	200
3/0	250	225
4/0	300	250
250	350	300
350	500	350
400	600	400



Service house attachment Service pole attachment

Figure 11-1. Open-wire service installation

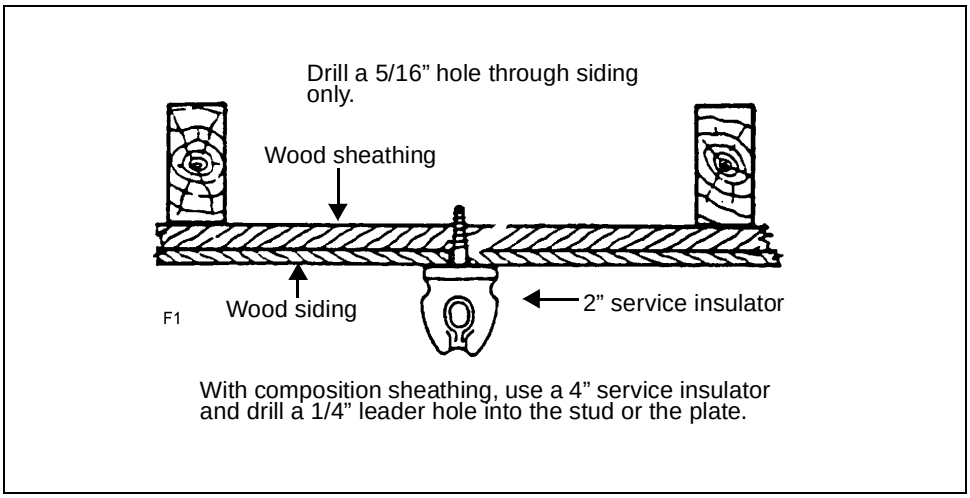


Figure 11-2. Wood siding

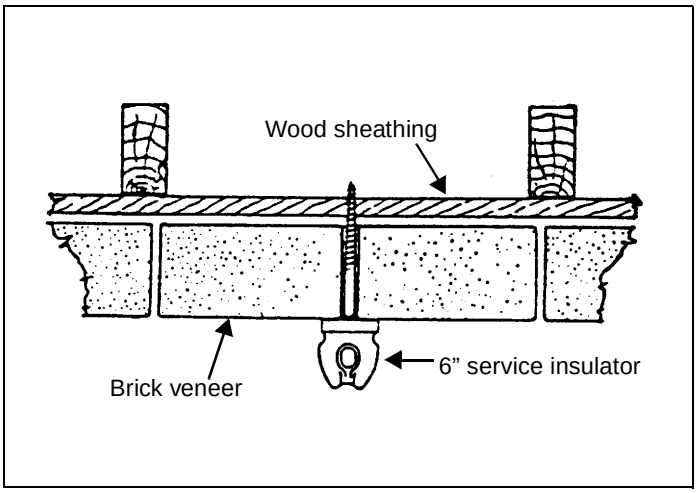


Figure 11-3. Brick-veneer wood sheathing

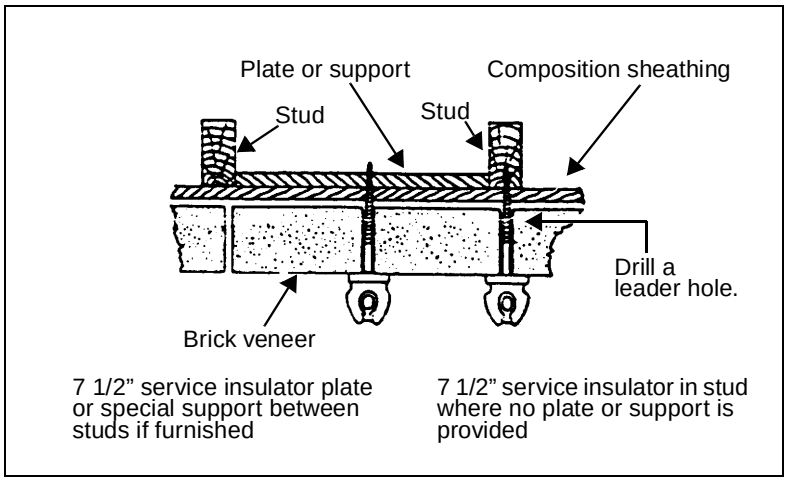


Figure 11-4. Brick-veneer composition sheathing

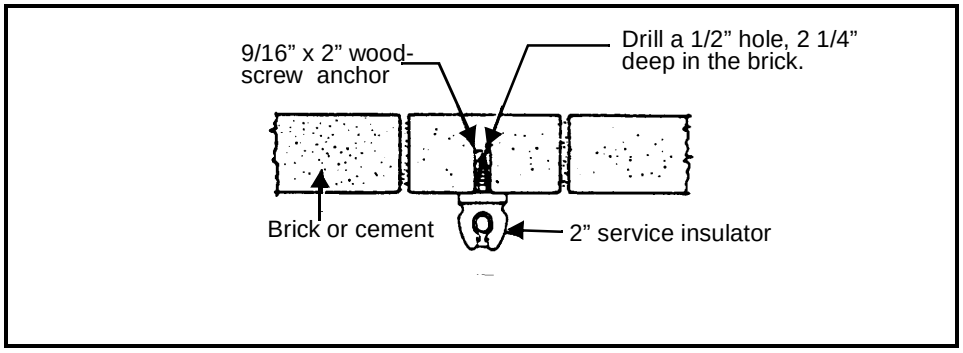


Figure 11-5. Solid masonry, brick or cement

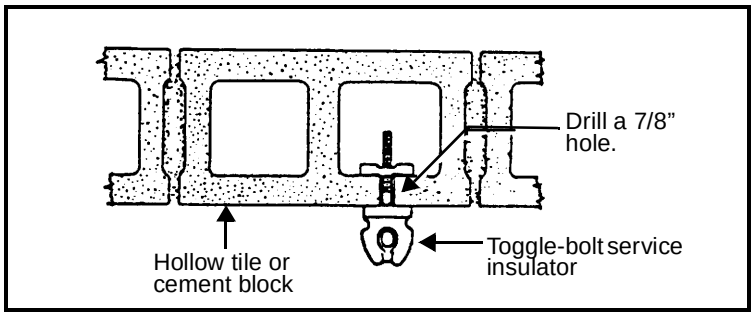


Figure 11-6. Hollow tile or cement block

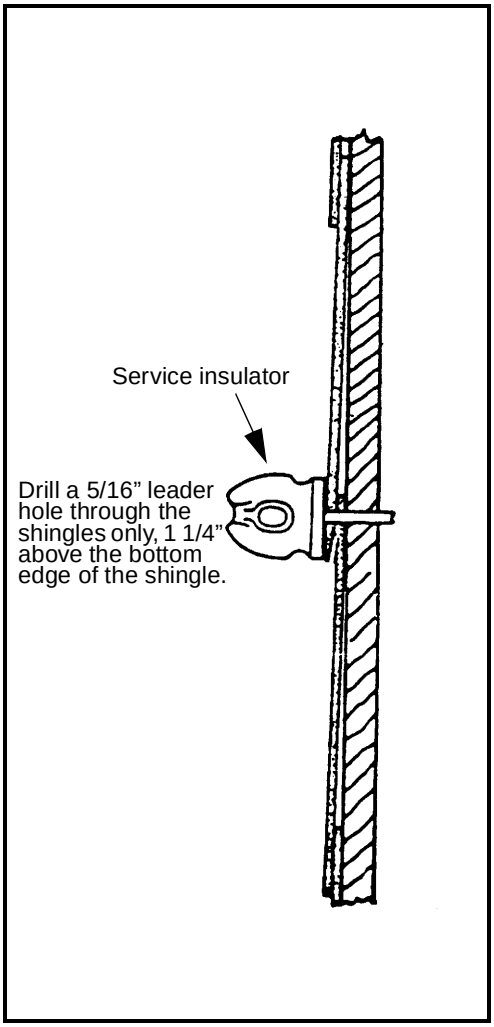


Figure 11-7. Composition or asbestos shingles

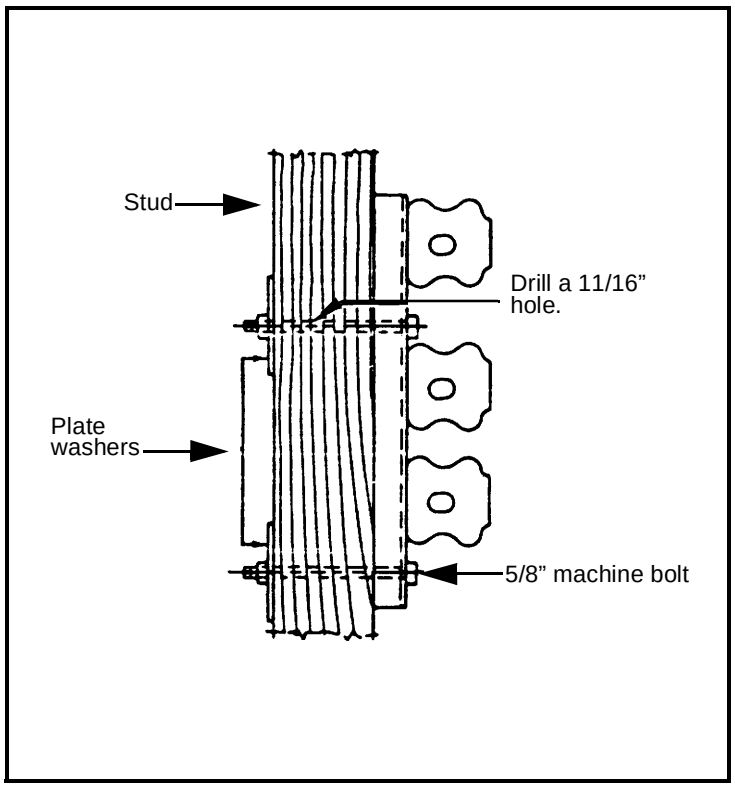


Figure 11-8. Wood, service-conductor tension over 900 pounds

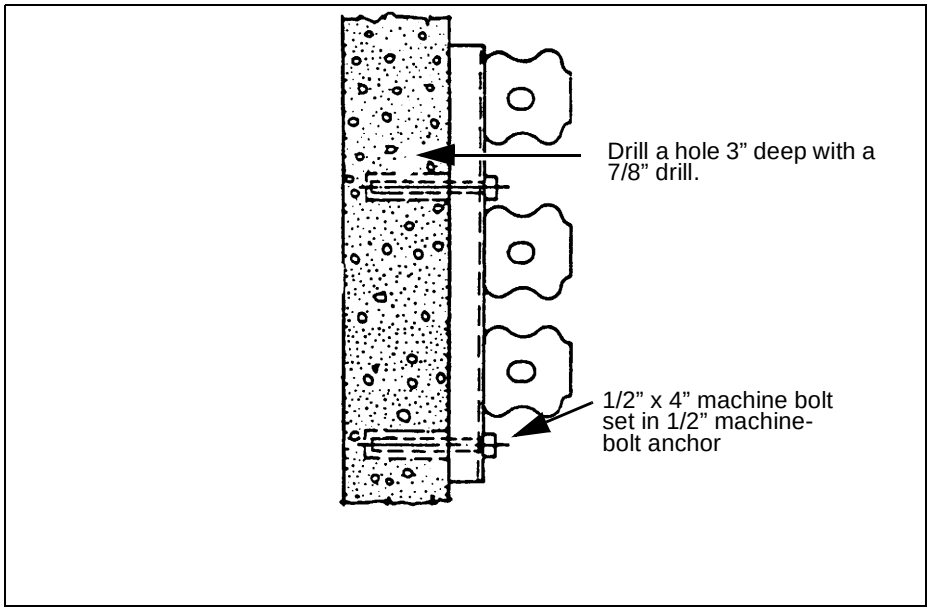


Figure 11-9. Solid masonry

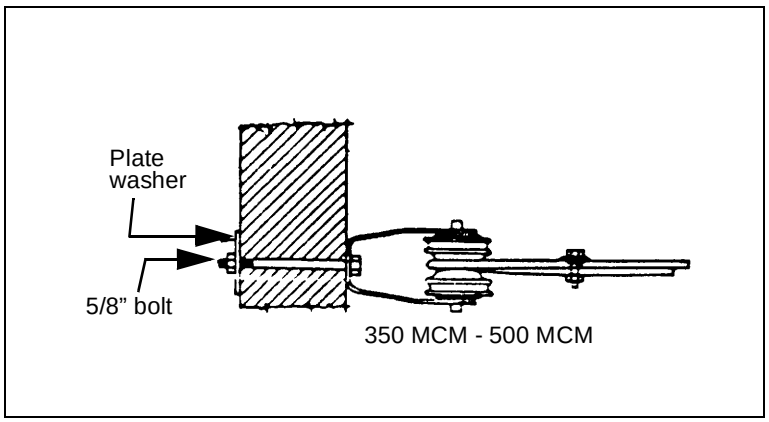


Figure 11-10. Attachment with dead-end spool

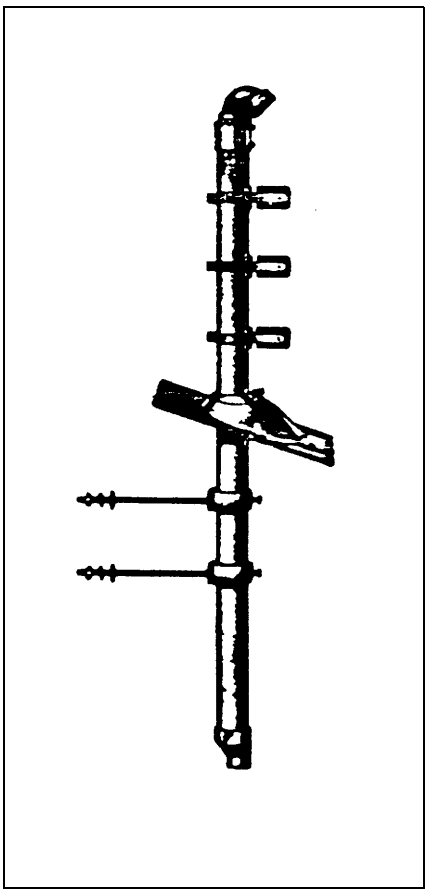


Figure 11-11. Service mast

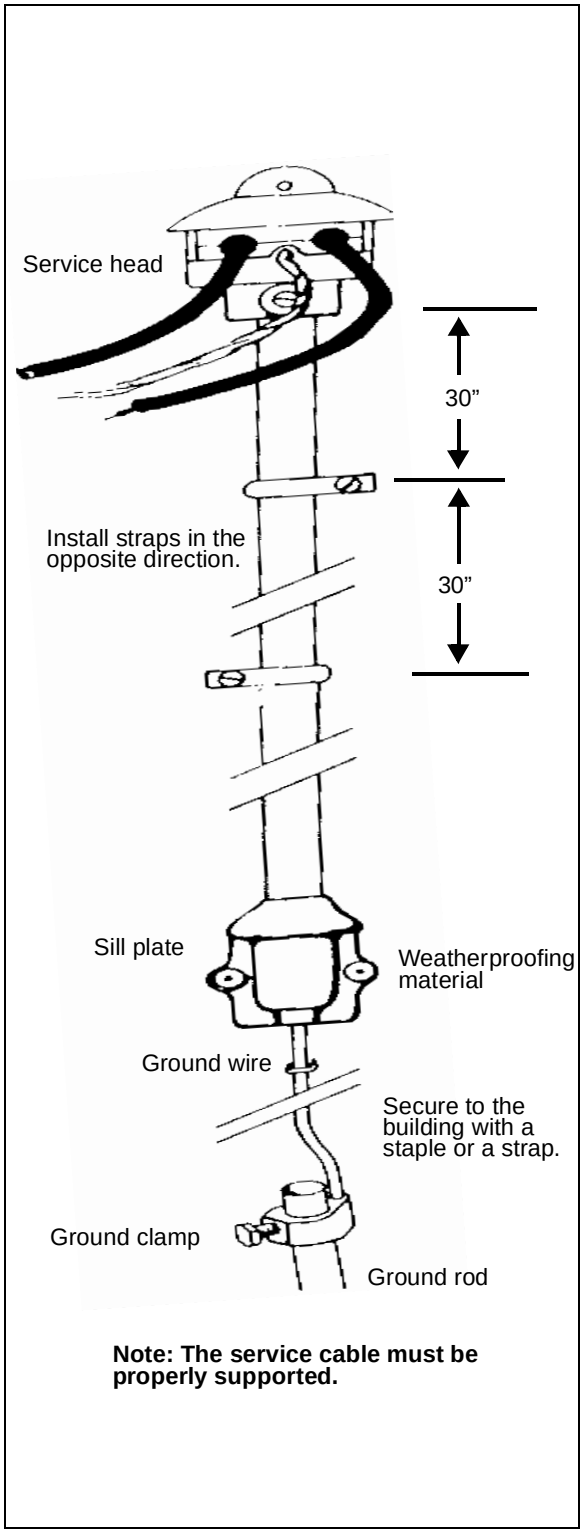


Figure 11-12. Exposed service-entrance cable

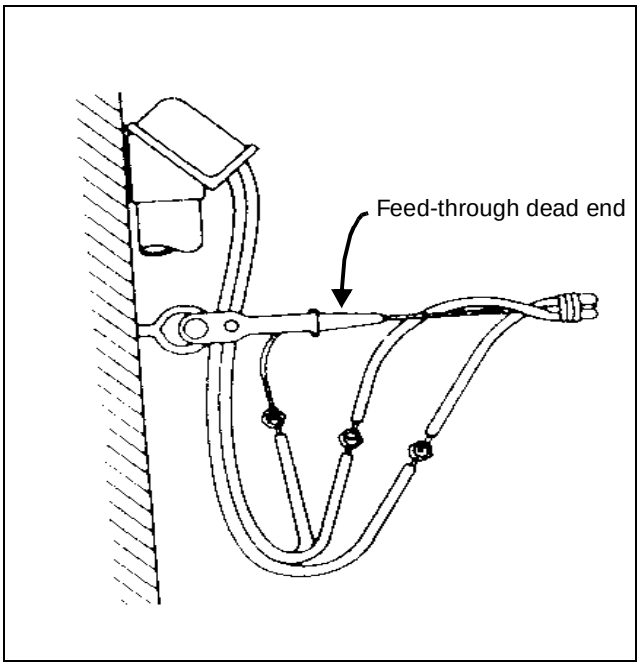


Figure 11-13. Method of attaching multiple-conductor services

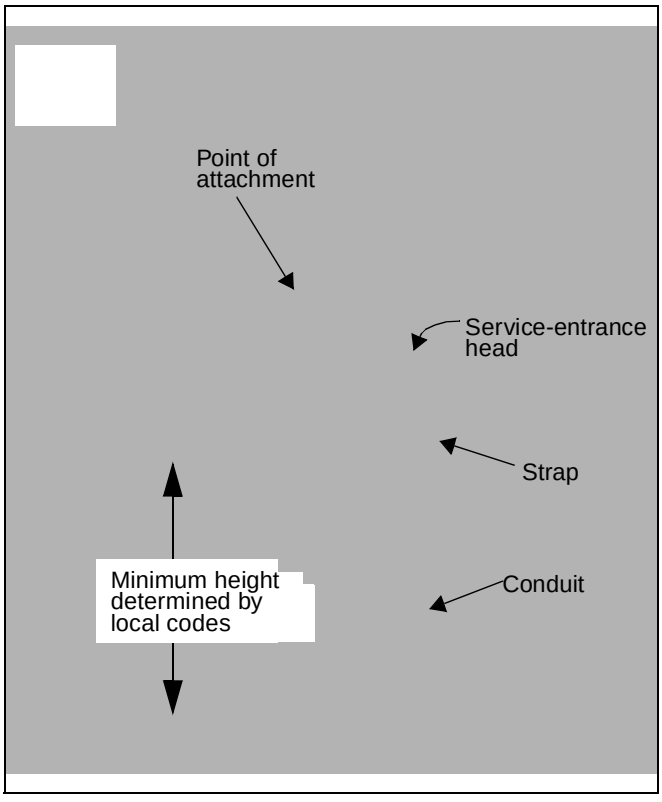


Figure 11-14. Entrance head below the roof line

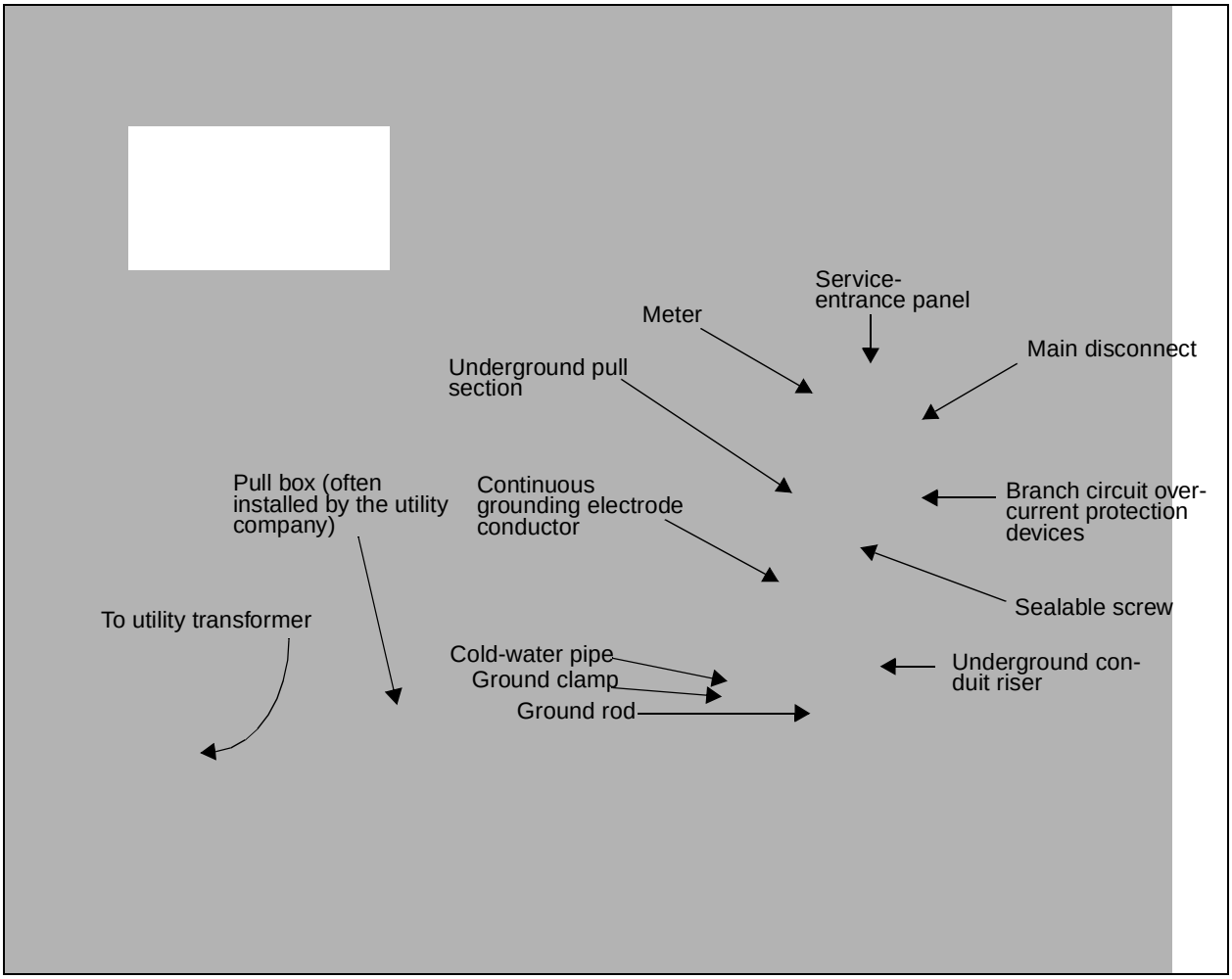


Figure 11-15. Typical underground service

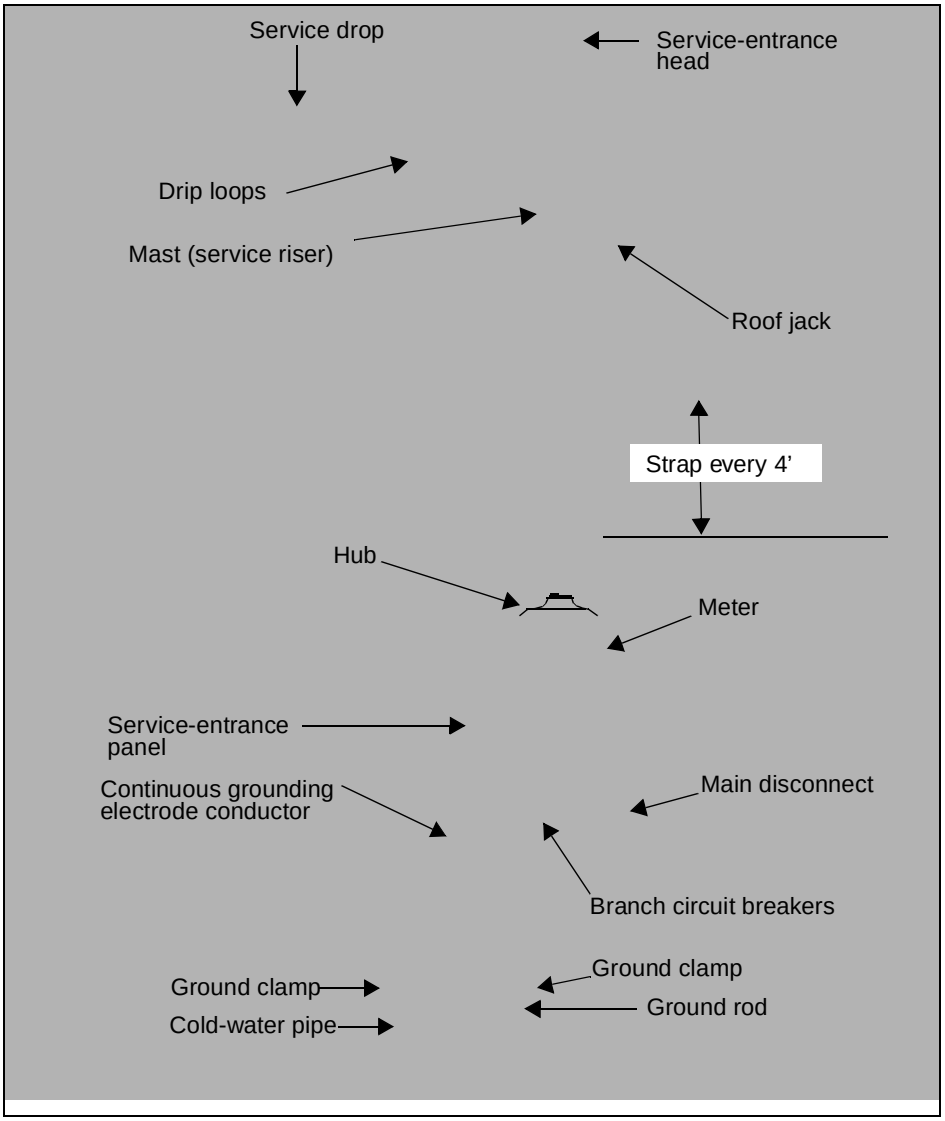


Figure 11-16. Typical overhead service